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ABSTRACT

The study investigated the potential additive effects of instruction in self-control strategies and behavioral parent training with 24 hyperactive children (7-11 years old) and their parents. It was hypothesized that the combination of treatments would provide maximum benefits by altering those contingencies in the home environment maintaining maladaptive behavior patterns while also helping the child develop specific adaptive behavioral skills and facilitating the development of internal attributions of causality regarding behavior change, making generalization and maintenance of treatment effects more likely. A randomized, experimental group design with repeated measures was employed comparing behavioral parent training alone, self-control instruction alone, and a combination. A multi-method strategy for assessing treatment outcome was employed, including child self-report measures, parent and teacher rating scales, and direct observations of each child's behavior in the classroom. Results failed to confirm the hypothesis of significant additive effects of the two treatments. Although all groups showed significant improvement over time, there was a greater decrease in problem behaviors reported by mothers of the self-control group alone, compared to the other two approaches. In addition, although there was significant maintenance of treatment effects at 1 month followup, there was no evidence for generalization of treatment effects to the classroom. (Author/CL)

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An Evaluation of a Multi-method Treatment Approach with Hyperactive Children

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Abstract

Numerous treatment approaches have been attempted with hyperactive children; however, while most appear to have therapeutic value while treatment is in process, no treatment alone has been found to produce significant generalization and maintenance of treatment effects. An alternative treatment approach is to employ combinations of different intervention strategies. The present research program investigated the potential additive effects of combining two of these approaches: behavioral parent training and self-control instruction. It was hypothesized that this combination of treatments would provide maximal benefit by altering those contingencies in the home environment maintaining maladaptive behavior patterns while also helping the child develop specific adaptive behavioral skills and facilitating the development of internal attributions of causality regarding behavior change, making generalization and maintenance of treatment effects more likely. A randomized, experimental group design with repeated measures was employed comparing behavioral parent training alone, self-control instruction alone, and a combination of the two treatments. A multi-method strategy for assessing treatment outcome was employed, including child self-report measures, parent and teacher rating scales, and direct observations of each child's behavior in the classroom. Results failed to confirm the hypothesis of significant additive effects of the two treatments. Indeed, although all groups showed significant improvement over time, there was a greater decrease in problem behaviors reported by the mothers for the self-control group alone, compared to the other two treatment approaches. In addition, although there was significant maintenance of treatment effects at one-month follow-up, there was no evidence for generalization of treatment effects to the classroom.

An Evaluation of a Multi-method Treatment Approach

with Hyperactive Children

Attention deficit disorders, commonly referred to as hyperactivity, are one of the most frequent and debilitating of childhood disorders (Barkley, 1982; Trites, Dugas, Lynch, & Ferguson, 1979). Numerous treatment approaches have been attempted with this disorder, including the use of psychopharmacological agents, behavioral parent training, and instruction in self-control techniques. However, while clinical research has demonstrated therapeutic value for each of the above approaches while intervention is in process, no treatment alone has been found to produce significant generalization and maintainence of treatment effects (Barkley & Cunningham, 1978; O'Dell, 1974; Phillips & Ray, 1980).

An alternative treatment approach is to employ combinations of the various treatment strategies. One combination of approaches which would appear to have good potential for maximizing generalization and maintainence of treatment effects is a combination of behavioral parent training with instruction in self-control techniques. Such an approach might provide maximal benefit by altering those contingencies in the child's home which have previously helped maintain the child's maladaptive behavior patterns, while also helping the child develop more adaptive behavioral skills through instruction in self-control strategies. In addition, the potential fostering of external attributions of behavior change by behavioral programs emphasizing external control, such as the use of "star charts" or token systems (c.f. Dollinger, 1979; Ross, 1976), might be countered by training in self-control strategies designed to facilitate the acquisition of an internal locus of control (c.f. Meichenbaum, 1977; Whalen & Henker, 1976).

Unfortunately, there are no published empirical studies regarding the possible additive effects of behavioral parent training and self-control instruction with hyperactive children. Rather, the empirical study of the additive effects of different treatment components of hyperactive children has been largely restricted to investigations of the use of behavior therapy with and without psychostimulant medication, the latter also hypothesized to foster external attributions of causality (Whalen & Henker, 1976). It is relevant to note, however, that behavioral strategies which emphasize the application of external controls have not been found to significantly add to the effects of psychostimulant medication (Gittleman-Klein, Klein, Abikoff, Katz, Gloisten & Kates, 1976; Wolraich, Drummond, Salomon, O'Brien & Sivage, 1978), but training in self-control techniques has been found to add to psychostimulant effects (Horn, Chatoor & Conners, 1983; Pelham, Schnedler, Bologna & Contreras, 1980; Wells, Conners, Imber & Delamater, 1981).

The purpose of the present study was to investigate the potential additive effects of instruction in self-control strategies and behavioral parent training with hyperactive children and their parents. A randomized, experimental group design with repeated measures was used with a multi-method strategy for assessing treatment outcome.

Method

Subjects. Subjects were 24 elementary school-aged children and their families. Inclusion criteria were: (1) age between 7 and 11 1/2 years (mean age = 9 years, 7 months); (2) a score of 15 or more (two or more standard deviations above published means) on the Hyperactivity Index of the Conners' Parent Questionnaire (mean index score = 21.7, range = 15 - 28); (3) the absence of gross physical impairments, intellectual deficits or psychosis in either the child or parent(s); and (4) the identified problem child was not currently receiving medication for control of his or her hyperactivity. Prior to the onset of treatment, 5 families dropped out of the study, 2 each from the parent training alone and self-control training alone groups, and one from the combined treatment group. In addition, it was determined that two subjects, one from the parent training alone group and one from the combined treatment group, actually were receiving psychostimulant medication at pre-test, but medication had been withdrawn by mid-treatment for both children. The mothers of these children stated retrospectively that the reason they did not initially report their child's medication use, was because they did not see any noticable treatment effect with the use of medication and were planning on discontinuing the medication. Indeed, these two children had pre-test Conners' Hyperactivity Indices of 20 and 28, indicating the presence of significant behavioral problems at pretest. Subject characteristics of each treatment group are presented in Table 1. As indicated in the table, univariate ANOVA's for each variable indicated that all differences between means were non-significant.

Independent Variable. Families were randomly assigned to one of the following three treatment groups: (1) parent training plus instruction in self-control strategies; (2) parent training alone; or (3) self-control training alone. Each intervention group met for eight weekly, 90 minute sessions. The major focus of the behavioral parent training group was on teaching parents to apply social learning theory principles to the management of their child's behavior (e.g. Forehand, 1977; Patterson, 1974). The self-control training consisted of instruction for the hyperactive child in the use of self-control strategies based upon the work of Camp and Bash (1981) and Meichenbaum (1977). All groups were co-led by two graduate students in the Clinical Psychology Program matched across groups for level of training.

Dependent Variables. The following dependent measures were administered at three points in time: pre-test, post-test, and one-month follow-up.

(1) Child self-report measures. The Nowicki-Strickland Locus of Control Scale for Children (Nowicki & Strickland, 1973) and the Piers-Harris Self-Concept Scale (Piers & Harris, 1964) were included as measures of each child's veiw of self-efficacy. Humphrey's Self-Control Scale (Humphrey, 1982) was included as a measure of the child's perception of the degree of his or her own behavioral control. The Social Desireability Scale for Children (Ford & Rubin, 1970) was included to check on whether any self-reported changes over time were due to an increase in socially desireable responses.

(2) Parent report measures. The Conners Parent Questionnaire (Goyette, Conners & Ulrich, 1978) was administered to obtain a parent report of each child's home behavior. In addition, the Lie and F scales from the Personality Inventory for Children (Lachar & Gdowski, 1979) were administered to check whether any reported changes were due to an increase tendency to either

minimize or exaggerate problems in the home.

(3) Classroom and academic measures. The classroom behavior of each child was monitored by direct observation using a five category behavioral observation coding system (i.e. Interference, Solicitation, Off-Task, Gross Motor Movements, and Out-Of-Sight) adapted from Abikoff, Gittleman-Klein and Klein (1977; 1980). The occurrence and non-occurrence of each of the cycles was scored in 15 second observe and 5 second record intervals by experimentally blind observers. All children were observed in the classroom for 30 minutes each at pre-, post-, and follow-up testing. Reliability observations were conducted on 74% of the observation intervals, and median Cohen's Kappas of .84, .92, .74, .92, and 1.00 were obtained, respectively, for Interference, Solicitation, Off-Task, Gross Motor Movements, and Out-Of-Sight. The Conners' Teacher Questionnaire (Conners, 1969) was also completed by each child's classroom teacher. In addition, each child's academic performance was assessed with the Wide Range Achievement Test, and an estimate of each child's overall cognitive abilities was obtained by administering the Slosson Intelligence Scale (Slosson, 1963).

Results

Table 2 presents the means and standard deviations for each of the variables at pre-, post-, and follow-up testing by treatment group. 3 X 3 (treatment group X time) ANOVA's were computed for each of the dependent variables using the 19 subjects who completed their respective treatment program. All p levels were derived using Greenhouse-Geisser adjusted degrees of freedom which corrects for the potential of artificially inflated p levels when using repeated measures. None of the main effects for treatment group were significant, indicating that the randomization process was successful in initially equating the three treatment groups on all dependent measures.

Child Self-Report Measures. Significant main effects for time were found for Humphrey's Self-control Scale ($F=3.71$, $df=2,15$, Greenhouse-Geisser adjusted $df=1.18, 28.97$, $p < .05$) and for the Piers-Harris Self-Concept Scale ($F=5.16$, $df=2,15$, Greenhouse-Geisser adjusted $df=1.50, 23.93$, $p < .01$), while non-significant main effects for time were found for the Nowicki-Strickland Locus of Control Scale and the Social Desireability Scale for Children. No significant treatment group by time interactions were found for any child self-report measures.

Parent Report Measures. Significant main effects for time were found for Total Problems ($F=14.30$, $df=2,32$, Greenhouse-Geisser adjusted $df=1.25, 20.06$, $p < .0001$), and the Hyperactivity Index ($F=26.13$, $df=2,32$, Greenhouse-Geisser adjusted $df=1.28, 20.42$, $p < .0001$), Conduct Problems ($F=6.24$, $df=2,32$, Greenhouse-Geisser adjusted $df=1.30, 20.86$, $p < .05$), and Anxiety/Withdrawal ($F=16.50$, $df=2,32$, Greenhouse-Geisser adjusted $df=1.62, 25.92$, $p < .001$) subscales on the Conners Parent Questionnaire. Main effects for time were non-significant for both the PIC lie-scale and F-scale. The only significant treatment group by time interaction was found for the Conners' Hyperactivity Index ($F=3.93$, $df=4,32$, Greenhouse-Geisser adjusted $df=2.55, 20.42$, $p < .01$). Subsequent univariate F-tests computed separately for pre, post, and follow-up time periods revealed that this interaction was accounted for by significantly lower hyperactivity scores for the self-control training only group at follow-up compared to the other two treatment groups ($F=17.54$, $df = 2,16$, $p <$

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.001), while differences between treatment groups at pre and post testing were non-significant.

Classroom and academic achievement measures. All main effects for time and treatment group by time interactions were non-significant for direct observation codes, the Conners Teacher Questionnaire, and the Wide Range Achievement Test. There was, however, a significant main effect for time on the Slosson scores ($F=6.69$, $df=2,32$, Greenhouse-Geisser adjusted $df=1.99, 27.89$, $p < .01$).

Discussion

The results of this study do not support the hypothesis that combining behavioral parent training and self-control training produces treatment effects greater than either treatment alone. Indeed, the only significant group by time interaction reflected a greater effectiveness at follow-up for the self-control training group alone compared to the other treatments. One might be tempted to infer that the greater effectiveness of the self-control training group at follow-up was due to an increase in the child's view of self-efficacy since no externally controlled reward system was included in this treatment condition. However, the child outcome measures believed to measure self-efficacy did not show similar treatment by time interactions. Nevertheless, it should be noted that all three treatment groups did result in significant behavioral improvements in the home, as reported by both the parent and the child. The presumed accuracy of these reported changes is enhanced by the finding of non-significant changes on the Social Desireability Scale for Children, and on both the Lie and F scales from the Personality Inventory for Children. In addition, although all treatment groups resulted in adequate maintainence of treatment effects at follow-up, no treatment group was found to produce adequate generalization of treatment effects from the home to the classroom.

The study, however, has a number of limitations the most important of which is the small sample size. Consequently, the sampling error in this study is potentially large and generalization to other samples may be limited. We are currently replicating the present study with a larger sample of hyperactive children and their families. This larger sample will allow for a more conclusive test of the hypothesis that intervening attribution variables mediate long-term maintanence and generalization of treatment effects.

TABLE 1

Demographic Characteristics of Each Treatment Group

Group	n	Mean Age	Mean IQ	Mean Years of Maternal Education	Mean Conners' HYP Index Score
Behavioral Parent Training Only	6	9.82 (0.95)	111.50 (7.74)	13.66 (2.94)	22.00 (4.00)
Self-Control Training Only	6	9.70 (1.00)	114.17 (14.33)	12.66 (2.42)	21.33 (3.08)
Combined Treatment	7	9.49 (1.50)	117.71 (15.22)	15.72 (1.38)	20.43 (4.31)

Notes. Standard deviations are presented in the parentheses below each mean. All differences between means are non-significant ($p > .05$).

TABLE 2. MEANS AND STANDARD DEVIATIONS OF DEPENDENT MEASURES BY GROUP OVER TIME

	PRETEST						POSTTEST						FOLLOW UP			
	N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC	
	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD
PARENT REPORT: PIC																		
FSCALE	25.00	2.16	24.00	1.67	23.00	1.10	22.86	1.21	24.17	1.47	22.50	1.38	23.14	1.57	24.00	1.55	22.17	1.83
LIESCALE	17.29	1.11	16.00	1.67	17.33	3.14	15.86	.90	16.67	1.63	18.83	3.06	16.00	1.00	16.50	.84	20.17	3.13
CONNORS TOTAL PROBLEMS	74.14	16.84	83.17	17.97	73.17	11.79	57.29	12.53	72.33	15.27	58.50	20.74	57.86	15.23	65.50	19.49	45.17	16.82
HYPEPAC-TIVITY	20.43	4.31	22.00	4.00	21.33	3.08	14.57	5.65	19.33	5.61	15.83	5.27	16.00	5.16	18.17	5.15	10.50	5.68
CONDUCT PROBLEMS	28.29	8.26	30.00	8.22	26.50	11.17	25.29	7.11	27.00	5.33	22.17	11.77	23.43	8.94	21.67	7.55	19.00	9.72
ANXIETY	12.86	7.08	18.00	7.04	14.50	3.89	9.43	4.12	14.00	4.52	11.50	2.74	8.14	4.06	13.33	6.15	8.83	1.60
LEARNING PROBLEMS	5.86	2.04	6.67	1.63	6.17	1.94	3.71	1.98	6.00	1.90	5.00	1.79	4.43	2.23	6.67	1.63	3.33	2.07
PARI: AUTHORI-TARINISM	-23.86	4.18	-19.50	9.40	-27.50	4.46	-21.43	5.29	-19.00	8.25	-27.83	3.76	-20.29	5.74	23.00	10.32	-26.67	5.43
HOSTILITY REJECTION	6.86	12.23	2.67	10.80	15.17	2.93	6.57	7.16	6.17	11.16	8.67	5.75	7.29	8.26	2.00	13.49	12.00	9.70
DEMOCRATIC ATTITUDES	17.00	5.48	17.00	4.60	21.17	3.71	15.71	4.42	17.33	5.65	19.00	2.00	14.29	5.94	20.83	7.03	19.17	4.26
PARENTING PARTNER	138.29	23.57	120.00	38.87	102.40	63.20	137.57	23.26	123.67	34.48	149.50	35.25	128.86	23.49	124.00	32.75	129.50	31.11

NOTE: PT = PARENT TRAINING
SC = SELF-CONTROL TRAINING

TABLE 2 MEANS AND STANDARD DEVIATIONS OF DEPENDENT MEASURES BY GROUP OVER TIME, CONT.

	PRETEST						POSTTEST						FOLLOW UP					
	N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC	
	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD
TEACHER REPORT: CONNORS																		
TOTAL PROBLEMS	42.57	18.76	46.17	21.03	40.67	15.21	40.43	15.63	34.50	16.31	37.00	16.69	35.40	7.54	36.50	17.25	38.83	19.44
HYPERACTIVITY	24.14	8.15	26.50	14.12	21.17	10.87	24.71	9.20	18.50	10.27	21.67	10.61	22.80	4.15	19.83	10.19	21.50	10.86
CONDUCT PROBLEMS	14.29	12.85	14.67	9.07	9.67	6.56	11.43	10.71	10.00	6.03	8.50	4.42	9.00	5.15	10.17	6.40	9.17	5.49
EMOTIONAL/ OVERINDULGENT	8.71	7.06	8.67	3.67	7.83	5.27	6.86	3.93	7.67	3.98	7.17	4.54	5.60	4.04	6.83	3.54	6.33	3.01
ANXIOUS/ PASSIVE	5.14	2.79	4.00	2.61	6.83	4.36	5.14	2.61	4.17	3.71	5.50	3.94	4.20	1.30	4.83	2.86	5.67	3.83
ASOCIAL	4.14	3.53	6.83	4.71	4.67	2.80	3.86	3.85	4.50	2.43	4.00	2.90	3.20	3.56	5.83	3.76	6.00	4.69
DAYDREAMS/ ATTENDANCE	3.43	2.57	5.50	1.52	3.67	1.63	3.71	3.04	3.83	2.86	4.50	2.43	2.20	2.29	4.50	3.08	4.50	2.88
SCHOOL OBSERVATIONS:																		
INTFERENCE	21.00	18.89	15.00	10.26	18.67	14.09	17.43	15.87	13.50	17.20	25.50	12.14	15.14	8.80	17.33	14.62	14.50	6.57
SOLICITATION	10.71	6.24	6.33	4.55	11.33	12.68	7.57	5.32	6.50	5.01	8.33	8.96	4.00	4.12	7.17	7.83	3.83	3.31
OFF TASK	10.29	8.65	8.00	6.23	15.67	17.05	11.71	10.29	5.67	7.06	15.67	7.20	8.57	6.29	10.50	8.46	9.67	6.77
GROSS MOTOR	17.29	14.19	24.17	15.61	15.83	16.29	23.43	34.29	33.83	28.29	24.17	17.36	23.57	23.06	17.33	6.74	8.00	5.18
OUT OF SIGHT	1.14	2.19	0.00	0.00	.00	0.00	0.57	1.13	1.67	2.66	1.67	4.08	.86	1.57	1.50	3.67	0.00	0.00

NOTE: PT = PARENT TRAINING
SC = SELF-CONTROL TRAINING

TABLE 2. MEANS AND STANDARD DEVIATIONS OF DEPENDENT MEASURES BY GROUP OVER TIME, CONT.

	PRETEST						POSTTEST						FOLLOW UP					
	N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC		N=7 PT+SC		N=6 PT		N=6 SC	
	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD	MN	SD
CHILD REPORT: SOCIAL DESIREABILITY	31.43	4.43	37.00	5.06	31.33	3.61	30.43	2.64	33.83	2.86	31.83	3.66	32.29	6.47	36.33	4.72	31.00	2.61
PIERS-HARRIS SELF CONCEPT	69 57	4.96	63.83	7.76	64.17	3.92	72.43	6.50	66.83	8.18	67.33	5.57	74.14	4.45	66.83	9.87	66.83	6.46
HUMPHREY SELF-CONTROL	16.14	1.21	16.50	2.66	15.67	1.97	17.29	1.80	17.67	1.97	16.50	1.52	16.86	1.86	17.33	1.91	16.83	2.56
NOWICKI-STRICKLAND(I-E)	31.29	3.99	29.67	3.61	31.67	5.68	31.43	3.69	29.33	5.57	32.50	3.94	31.57	5.06	30.50	3.73	31.83	4.31
WRAT READING	86.43	12.88	67.50	9.86	68.50	34.45	85.00	13.66	73.83	20.57	69.83	31.59	86.14	8.34	73.67	18.54	70.83	25.52
WRAT SPELLING	68.14	14.18	57.67	17.91	58.17	30.39	75.29	14.59	56.17	19.18	53.00	33.27	74.86	15.66	61.00	24.98	54.00	31.11
WRAT ARITH	44.57	26.99	37.00	14.46	48.00	20.39	49.43	18.51	39.33	22.89	56.50	24.83	53.43	17.92	53.17	23.16	51.83	27.54
SLOSSON IQ	117.71	15.22	111.50	7.74	114.17	14.33	121.14	11.44	115.67	11.36	122.50	18.89	125.14	18.07	120.83	6.37	120.83	15.69
MATCHING FAMILIAR FIGURES(ERR)	12.43	6.02	14.00	4.65	9.67	7.55	11.71	5.56	9.17	7.08	6.33	7.42	7.00	4.08	9.33	10.56	6.00	2.53
MATCHING FAMILIAR FIGURES(LAT)	8.57	5.34	7.80	2.16	11.48	5.87	7.14	2.93	7.95	1.90	14.92	7.26	8.60	4.12	8.73	2.17	12.23	10.76

NOTE: PT = PARENT TRAINING
SC = SELF-CONTROL TRAINING

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